



California

JOURNAL OF

EDUCATIONAL RESEARCH

Vol. I, No. 1

January 1950

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PUBLISHED BY

CALIFORNIA TEACHERS ASSOCIATION

391 SUTTER STREET • SAN FRANCISCO 8

CALIFORNIA JOURNAL OF EDUCATIONAL RESEARCH

Published by the California Teachers Association

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The California Journal of Educational Research is published at San Francisco five times a year: January, March, May, September, and November. Subscription price: \$6.00 per year; single copies, \$1.50. Editorial office address: CALIFORNIA JOURNAL OF EDUCATIONAL RESEARCH, 391 Sutter Street, San Francisco 8, California. (Checks should be made payable to the California Teachers Association.)

Application for second class matter pending.

CALIFORNIA JOURNAL OF EDUCATIONAL RESEARCH

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WELCOME: *The California Journal of Educational Research*

ROY E. SIMPSON

Superintendent of Public Instruction
California State Department of Education

THE responsibilities of the California Teachers Association lie in many fields of activity. They include maintenance of high professional standards, action in behalf of the welfare of the membership, action to maintain good public relations, publication of useful information for members of the profession, and the conducting of professional studies grounded in research. In all of these fields the California Teachers Association has maintained a constructive and effective program for many decades.

Our experience as school people in California during the years of the second World War and during the postwar years has indicated to us clearly that as the State of California enters a new era with a rapidly increasing population and a rapidly increasing importance among the United States, public education in the State is also changing. The huge new pupil population in the public schools brings with it many problems relating to the expansion of our programs and services, curriculum development, financial support by state and local agencies, provision of adequate school housing, and the recruiting and certifying of sufficient numbers of qualified teachers.

In this period, we have observed on many occasions the necessity of having facts about these changes ready for presentation to the people of our communities and of the State, to their civic and service organizations, and to agencies of government that work with school authorities on many public school problems. We have found that to perform the research necessary to obtain facts about all aspects of public education is not in itself enough. We have found that it is very important that we should have summaries of our research and our studies in published form so that they may be readily available to all interested citizens and citizen groups when questions relating to public education are raised.

For this reason and others, the decision of California Teachers Association to publish the *California Journal of Educational Research* is one of the most important CTA has made in recent years. The intent of the State Advisory Council on Educational Research, a representative body that is to serve as editorial board of the new publication, is that the Journal will serve as a much-needed clearing house of educational research information from California and elsewhere. Those to whom the new service is especially addressed include school administrators, teachers, school research staffs, supervisors of instruction, school of education faculties, libraries, and graduate students. The plans of the editorial staff have been most carefully prepared, and I am confident that the five issues of the new Journal that will be published each year will be most welcome throughout the State and beyond its borders.

CALIFORNIA EDUCATION—How Good?

EDGAR L. MORPHET

University of California, Berkeley

JUNE 16, 1948 may well prove to be a date of unusual significance in the history of education in this country. On that date the Governors of the States, assembled in annual conference, adopted a resolution recognizing that "The education of the youth of the land is one of the fundamental duties of government, and provision of adequate and efficient machinery for that purpose is one of the principal costs of government." In this resolution the Governors directed the Council of State Governments, which is the joint governmental agency established and supported by the states for service to the states, to "conduct a study and compile a report on the systems of education in the various states."

While the governors had previously, from time to time, considered various issues pertaining to education, they had never during their forty years of annual meetings so clearly recognized the significance of education nor undertaken to sponsor a study that would make available to all of them the most important facts relating to public school education in each of the states and in the nation.

It was agreed that (1) the study should be started promptly so it could be completed in time to be presented at the next annual Governors' Conference scheduled for June of 1949, (2) much of the information needed would have to be obtained through the respective states and chiefly through the state departments of education, and (3) since the study was to be concerned with education, it should be planned and carried out under the immediate direction of educators acquainted with the major problems and issues in the field.

One important supplementary nationwide study in the field of school finance is now under way under the sponsorship of the U. S. Office of Education with the cooperation of the Council of State Governments and

Dr. Edgar L. Morphet left his position last September as chief of school finance in the Division of School Administration, U. S. Office of Education, to become professor of education at the University of California, Berkeley. He previously served as director of administration and finance in the Florida State Department of Education, executive secretary of the Florida Citizens Committees on Education, and associate research director of the Council of State Governments' study of *The Forty-Eight State School Systems*. Dr. Morphet's article, the January feature, is based upon the aforementioned study.

the School of Education of the University of California. The report of this study, which should be ready for publication before the close of the current school year, will give pertinent information on school finance for 1949-50, will give a rather detailed analysis of the school finance system of each state, and will summarize major trends and developments during recent years.

Major Findings and Conclusions

The report calls attention to the following three commonly found structural defects which tend to provide serious handicaps for the educational programs in many states:

1. Constitutional and statutory provisions often serve as barriers to capable educational leadership. In many states constitutional and legal provisions still call for election of the state superintendent and of county superintendents by popular vote. Some states still have no state board of education. In many states the laws do not clearly define responsibilities and thus tend to bring about confusion and conflict.

2. The local school administrative unit structure is still quite inadequate in a large number of states. Fewer than four per cent of the local school units throughout the country are large enough to provide as many as forty teachers each. (This is considered the minimum for a satisfactorily organized local unit.) A few states even have, as a prevailing pattern, separate districts for elementary and for secondary schools.

3. Methods of distributing state school funds are hopelessly inadequate in a number of states. Some states still provide only inconsequential funds from state sources, while others distribute a large proportion of all funds on a flat-grant basis. As a result, there are great inequalities in educational opportunity in many states between wealthy and poor districts and often between urban and rural areas.

The report (p. 9) makes the following significant observation which should be of great interest and concern to school administrators and research directors throughout the states involved:

"Underlying and abetting all of these weaknesses is a lack of facts to guide those who make state policies. The difficulties encountered in obtaining data needed for this study bear testimony to the lack of necessary records in a number of states. In some states it is almost impossible to obtain an accurate picture of the qualifications of teachers or the variations in current expenses among the several districts. State responsibility for education cannot be exercised properly unless facts are available about local provisions for education throughout the state and the effect of state policies and practices upon these provisions."

And How About California Schools?

School and lay leaders of California should be interested in singling out from *The Forty-Eight State School Systems* some of the important

facts and ideas pertaining to the school system of this State. What strengths and weaknesses are shown? What problems seem to stand out as needing careful attention? What studies should be made as a means of throwing further light on these problems? What basic difficulties in organization or structure seem to exist and what steps should be taken to help to solve these problems?

First it should be noted that California is one of the states which seems to have difficulty in obtaining and making available promptly the facts concerning certain aspects of education in the state. From the tables in the Appendix of *The Forty-Eight State School Systems*, it will be seen that several items for California have only the comment "no information"; for other items only estimates are used. In some instances the item which is omitted or estimated may not be of much significance; in others it is undoubtedly important at least from the point of view of obtaining a picture of the situation throughout the country. To the extent that any important item of information is not available, the basis for studying the situation and planning improvements is limited.

One explanation of the missing or estimated items in the case of California is undoubtedly the complicated local school district system and the difficulty of obtaining comparable information from the numerous small districts in the State. Another explanation may lie in the fact that some items in the record and reporting system of the State are not geared to those used in most other states. This explanation, however, should not be accepted as sufficient justification for omitting the items, but rather should be recognized as a challenge to the people of the State to take whatever steps are necessary to overcome the difficulty.

Educational Load

California in 1947-48 had 1,687,000 children of school age (5 to 17 years), the third largest number of any state. New York had the largest number, 2,385,000, and Pennsylvania had the second largest, 2,024,000.

While the total number of children of school age in the State indicates the magnitude of the problem to be faced, it does not show what is commonly called the school load and gives no basis for comparison with other states except in terms of total number of children. The number of children per thousand of the total population is a more significant measure.

In 1947-48 California had only 172 children per thousand of the total population. The average for all states was 205. Only three states had a smaller number of school-age children per thousand in the total population than California. These were New Jersey, 166; New York, 168; and Connecticut, 171. The largest number was in New Mexico, 283 per thousand.

The ratio between the public school enrollment and the school age

population in California was higher than the average for all states. The ratio in California was 84.9 per cent; for all states, 81.6 per cent. This ratio is effected by the proportion of children who attend and continue through school and also by the proportion in non-public schools.

Ability to Support the Program

The measures most commonly used to determine the ability of a state to support its school program are the per capita income, the income per school-age child, and the income per child in average daily attendance in the public schools. An annual estimate is made of the income of the people in each state by the U. S. Department of Commerce. The population estimates are provided by the U. S. Bureau of the Census and the average daily attendance figures are obtained from each state. On the basis of the per capita income of the total population, California in 1947-48 ranked sixth among the states. The per capita income of the state was \$1,643. Nevada ranked first with a per capita income of \$1,842, and Mississippi was lowest with a per capita income of only \$659. The average for all states was \$1,318.

A better measure of ability to support the potential school load is the income per child of school age (5 to 17). On this basis, California had an income of \$9,556 per child and ranked fourth among the states. New York was highest with an income per child of \$10,742; Nevada next with an income of \$10,240; and Connecticut third with an income of \$9,789. Mississippi again was low with an income per child of only \$2,374. The average for all states was \$6,436.

The income per pupil in average daily attendance should theoretically be a better measure of the ability to support the actual school load than the other bases, but unfortunately the average daily attendance figures are not comparable for all states. For example, the average daily attendance reported for California includes both kindergarten and junior college pupils, while some states have neither public kindergarten nor junior college pupils and a few states still have most of their pupils in an eleven grade system. The situation has been even more seriously complicated by the comparatively recent decision in California to include average daily attendance for children who are absent for legitimate reasons. On the basis of the available figures on income per pupil in average daily attendance in the public schools, California appeared to rank 10.5 with an income of \$10,599 against an average income of \$8,981.

Effort to Support Public Schools

The effort made by the citizens of a state to support their public school program may be measured fairly accurately by finding the ratio between the revenue provided for public schools and the income of the people for

any given year. Public school expenditures may also be used, but expenditures ordinarily do not constitute as satisfactory or reliable a measure as revenues, because expenditures may not include all of the available revenues or may include some balances carried over from previous years.

The following tabulation provides some interesting information regarding effort to support schools as represented by the ratio between the income of the people and the public school revenue in 1937-38 and ten years later, in 1947-48:

	1937-38		1947-48	
State with Highest Effort.....	South Dakota	5.8	New Mexico	3.6
California	(Rank 14.5)	3.5	(Rank 31)	2.1
State with Lowest Effort.....	Connecticut			
	and Delaware	2.1	Illinois	1.4
Median Effort		3.1		2.3

Contrary to what most people seem to think, practically all states are now making a considerably lower effort to support their schools in terms of their ability than ten years ago. All states except one devoted a smaller proportion of their income to public school support in 1947-48 than in 1937-38. California dropped during that period from a rank of 14.5, with 3.5 per cent of the income devoted to the public schools, to a rank of 31 with only 2.1 per cent of its income devoted to the public schools. Thus California instead of making a relatively high effort to support its schools, as was the case ten years ago, was making less than average effort in 1947-48.

Current Expense Per Pupil

Although there are some differences in the quality of education which can be provided in the various states for a given expenditure, it is commonly recognized that the current expense, including interest, per pupil in average daily attendance represents a fairly valid measure of the level of education which is afforded. There has been a marked increase in the current expense per pupil in all states, but the actual increase, when 1947-48 expenditures are expressed in terms of the 1935-39 dollar value, is only about \$22 per pupil.

In 1937-38 New York had the highest current expense per pupil, \$159.67. That year California was second with an expenditure of \$140.34 and Mississippi was low with an expenditure of only \$28.35. The median was \$82.79. In 1947-48 New Jersey was high with a current expenditure of \$260.80; California seems to have dropped to fifth with \$223.45 (estimated) and Mississippi was still low with an expenditure of \$66.54. The median was \$178.71.

In terms of the equivalent dollar values, the current expenditure per pupil in average daily attendance in California seems to have actually decreased in the amount of \$5.12 per pupil between 1937-38 and 1947-48. However, because of the change in the plan for determining average daily

attendance in California, the data are not fully comparable and for that reason the decrease in rank and expenditures probably is not as great as seems to be indicated.

Miscellaneous Items

An effort was made to determine the relative position of the various states on value of school property, school indebtedness, and expenditures per pupil in average daily attendance for textbooks and teaching supplies, for capital outlay, and for interest paid. The latest figures available for California on each of these items were for 1945-46; therefore, they are not comparable with the 1947-48 figures provided by most other states. However, the 1945-46 figures for California were higher than the corresponding figures for most other states for 1947-48. The value of school property in California per pupil was given as \$549; the median for all states, \$401. School indebtedness per pupil in California was \$154, the median, \$71.88. The expenditure reported for textbooks and teaching supplies was \$13.56 for California; the median was \$5.43. Medians were not computed for capital outlay expenditures and interest payments because of the marked variations.

In California, the public junior college enrollment in 1947-48 was equal to 70.1 per cent of the high school graduates for that year. This was by far the highest ratio found for any state. The next highest was in Washington where the ratio was 44.6. The ratio between the kindergarten and elementary enrollment in California was 10.1. This was fifth highest. However, for some reason, perhaps largely because of the prevailing 8-4 organization in the State, the ratio reported for California between secondary enrollment and the enrollment in grades K to 12 was only 23.6, slightly below the average for all states which was 24.3.

State Organization

The facts provided show that the State Board of Education of California has relatively broad powers. California is in the relatively fortunate position of having only two state boards for public education: the State Board of Education being responsible for everything through the junior colleges and the state colleges, and the Board of Regents having responsibility for the University. However, there are about five states that have only one state board of education for all phases of education.

The terms of the state board members in California are among the shortest found in any of the states, — four years. In most other states the terms range from five on up to thirteen years. It is commonly recognized that the terms of state board members should probably be about nine years in length and should be staggered so as to help to assure that no governor will be in position to control the state board.

The position of the chief state school officer is considered one of the most important and potentially one of the most significant educational positions in each state. Unfortunately, the chief state school officer has been elected by popular vote in slightly more than one half of the states up to the present time. However, all state survey reports during recent years have recommended appointment by a properly constituted state board of education. The Chief State School Officers themselves, at their annual meeting in 1948, recommended appointment as the best method for selecting chief state school officers. Massachusetts, Missouri, Texas, and Colorado have changed from the elective to the appointive method during recent years and such a change is being seriously considered in several others.

In California the chief state school officer is still elected by popular vote. There is thus no effective plan of assuring continuing cooperation between the chief state school officer and the state board of education or of assuring that the person selected will be the best qualified person available. The salary paid the chief state school officer in California fortunately has been increased to the place where it now ranks among the five highest.

School Districts or Local School Administrative Units

California is one of several states having a large proportion of small school districts or local school administrative units. Of the 2,349 districts in the State in 1947-48, 67.6 per cent had nine or fewer teachers and only 9.8 per cent had forty or more teachers. California is also one of a relatively small number of states having a large proportion of separately organized elementary, high school, and junior college districts. Of the 2,349 districts in the State, slightly more than two thousand had elementary schools only.

In connection with this study an effort was made to determine practices in each state which tend to encourage district reorganization and factors which tend to retard district reorganization. Most states listed a number of such factors, but no such listing was available for California. However, a report recently made by the Commission on School Districts¹ shows definitely that there are a number of factors which have operated to discourage district reorganization in California. It seems fairly certain that unless these factors can be modified and plans can be worked out for effecting more adequate organization of districts, many California schools are likely to continue to be handicapped.

No information was provided concerning the composition or responsibilities of the county board or of the county superintendency in California. However, California is one of the states providing for election of county superintendents by popular vote. It is generally recognized that selection

¹ Findings and Recommendations of the Commission on School Districts, State of California, 1949.

of the county superintendent by a properly selected county board is more likely to produce satisfactory results than election by popular vote. The evidence seems to indicate that the county board should be a lay rather than a professional board and should definitely be responsible for policy decisions for all phases of the program.

Teaching Personnel

California stands near the top of the list of states in terms of training and salaries of teachers. Only 3 per cent of the California teachers were reported as having less than two years of college training and 23.0 per cent with less than four years. The averages for all states were respectively 12.9 per cent and 40.9 per cent. Seventy-seven per cent of California teachers were reported as holding bachelor's or higher degrees; 52 per cent were reported to hold master's or higher degrees.² A few states had a higher percentage than California of teachers who were college graduates, but no state reported a larger percentage of teachers holding master's or higher degrees. The average for all states of teachers who were college graduates was 59.1, but the average of master's degree holders was only 14.4 per cent.

California also stands near the top in terms of salaries paid teachers. The average salary reported for California was \$3,400; that for New York, the only other state with a higher average salary than California, was \$3,450. The average for all states was \$2,440.

California also seems to lead the nation in the ratio of the number of elementary teachers being prepared in four-year programs to the estimated number needed to replace elementary teachers withdrawing from service in 1947-48. The ratio, in California was 90 and in New York, the next highest state, was 70. California, however, as is true of all other states, has a large accumulated deficiency in the elementary grades and will need a much larger number of teachers to meet this deficiency during the next few years than the number being prepared. Many additional teachers will also be required because of the very rapid population growth. The number being prepared for secondary schools seems to be much more nearly adequate to meet the needs.

Finance

The amount estimated to be needed in California to provide school plant facilities during the next five years is \$1,255,000,000. The largest single amount reported by any state, New York, was only slightly higher, \$1,261,822,000. California is one of about a dozen states making fairly substantial provisions through state funds to assist with local school plant

² This apparently includes all persons certificated on the basis of five or more years of college training and therefore may not be comparable with data from most other states.

construction programs. However, the state aid for capital outlay in California thus far has been only on an emergency basis and is so far short of the needs, even when the recently voted \$250,000,000 in bonds for capital outlay purposes is included, that it is evident the problem will have to be given further careful consideration in the near future if a satisfactory solution is worked out.

The percentage of all school revenues derived from Federal, state, county, and local sources in California and the median for all states is shown by the tabulation below:

	California	U. S. Median
Federal -----	0.4%	1.3%
State -----	52.0%	39.8%
County -----	0.9%	5.7%
Local -----	46.7%	53.2%

Ten years ago in California 41.3 per cent of all school revenues came from state sources. The median percentage at that time for all states was 29.6. The fact that California provides a larger percentage of funds from state sources than the typical state is reflected in the percentage of school revenue derived from property taxes. In California the percentage from property taxes was only 45.4 as compared with a median of 60.5. The percentage of school revenue derived from property taxes in 1947-48 ranged from 11.2 in Delaware to approximately 89 in Massachusetts.

California is among the states having the largest number of different state school funds. The number reported for California is 12. Only five other states reported that many different funds. Most states during recent years have reduced the separate funds or appropriations for schools to not more than five or six and two states have only two funds each.

California is also among the states distributing a large proportion of all state funds on a flat-grant basis. In California 78 per cent of all state funds were distributed on this basis in 1947-48. Only six other states distributed a larger proportion of their funds as flat grants, that is, as funds that provide the same amount per pupil or other unit regardless of the wealth of the district. California consequently is among the states distributing the smallest percentage of funds on an equalizing basis. In this State only 16.8 per cent of all state funds were distributed in 1947-48 as general purpose equalizing funds. This does not include the emergency fund for capital outlay.

California seems to be in a fortunate position with reference to its local tax levies for schools and its school budgetary procedures. In view of the fact that the people of a local school district can vote to go beyond the prescribed limit, there seems to be more leeway for levying local taxes, (that is, fewer arbitrary limitations have been imposed by the Legislature), and there is more leeway with respect to budgetary autonomy than in many other states. Several states have placed such arbitrary restrictions on

tax leeway and budgetary procedures that their school programs are being greatly handicapped.

Summary

The above facts constitute only a few of those presented and discussed in *The Forty-Eight State School Systems*. They point to a number of strong points in the California school program, but also indicate several problems and weaknesses that undoubtedly need further study. The conclusions presented in the report of The Council of State Governments indicate the general direction in which each of the states might well move in most of these areas. The Governor of California, as is true of the governor of each of the other states, has a copy of this report which is recognized as an official document sponsored by the Governors' Conference. However, it should be evident that the Governor as well as members of the Legislature and other citizens of the State will need the results of additional intensive and comprehensive studies if they are to be in position to act intelligently in planning needed improvements in the program.

In some respects California's schools now stand out as among the best in the nation. There is no real reason why they should not be best in every respect. To make that possible will require greater cooperative effort and more intelligent planning on the part of both lay citizens and professional educators than ever before. Adequate funds must be provided for needed studies. Inefficiencies must be brought to light and eliminated. Problems of school district reorganization must be fearlessly solved instead of being sporadically discussed. Subsidies for preserving status quo must be discontinued. The needs of the children must always be placed above the claims of vested interests or other irrelevant considerations. When these things are done, and are done satisfactorily, another study should show that California's school program is preeminent in all respects rather than only in certain respects.

"All research is concerned with practice — at least eventually. Even so-called pure research is carried on with the implicit belief that eventually increased knowledge will lead to a better world. The peculiar characteristic of this kind of research is that the research worker is not to be asked to justify what he is doing in terms of immediate problems now facing society." Excerpt from "Research and Practice: The Case for Impure Research," by Ralph B. Spence (*Growing Points in Educational Research*, 1949 Official Report of the AERA, page 297).

THE EDITORS SAY:

We Hope You Like Us!

GREETINGS! May we introduce ourselves and share with you some of our ideas and aspirations for the *California Journal of Educational Research*. Frankly, we are not so much concerned about introducing a *new* publication as we are in influencing educators and laymen to the wider acceptance of the role of research in forwarding education.

We feel that an educational research journal has an important role to play in the improvement of educational services to the children of the State. The *California Journal of Educational Research* will not become the infallible oracle to which all problems of education shall be referred. Rather, we propose to get the results of educational research out of files and bookshelves and into the lives of children.

In a very real sense we want the Journal to be the voice of the practicing educator as well as the innovator and the experimentalist. The Journal may well become a forum for those in educational research as well as a vehicle for carrying into the classroom the results and recommendations of significant research findings.

We shall attempt to adhere to accepted standards of scientific research in reporting studies. At the same time, we expect to present material in readable style. We will look with suspicion upon anything that appears to be propaganda. We shall not cater to mere "hobbyism." Most of the articles will be limited to three pages, or 1500 words. We expect to place emphasis on research which has direct application to teaching and school situations.

In as many ways as possible, the content of the Journal will be made to serve educational progress through research reporting. We welcome articles that contribute to this end.

Digests of theses and dissertations, when approved by members of the editorial board or by faculty representatives, will constitute a continuing source of research information for our readers. Many of these studies, worthy of publication, might not otherwise come to the attention of educational consumers. While we expect to feature California research, we would be disappointed if we did not appeal also to those in other parts of the country who may wish to submit significant articles for publication in the *California Journal of Educational Research*.

The *California Journal of Educational Research* will be prepared to meet a variety of interests in education. Each issue will contain some regular departments such as: a feature article, digests of current research studies, and news and views of persons and events in the field of educational research. Special features are planned and will be included as the

need and materials permit. Some of the special attractions to be found in subsequent issues will be: book reviews, a question box, bibliographies, and guest editorials.

We are proud to call attention to the feature article in this issue by Edgar L. Morphet. It merits the thoughtful study of all California school personnel. A special attraction in the May issue will be the annual classified bibliography of theses and dissertations that have been completed at California colleges and universities during the past year. This will become a regular annual feature of the Journal.

We feel fortunate in having such a fine editorial board (listed on the inside of the front cover). It will evaluate material to be published in the Journal. Both the editorial board and the editors will welcome suggestions and criticisms of the new venture. Our satisfaction will be realized in pleasing our readers.

AERA To Meet At Atlantic City

The American Educational Research Association, a department of the National Education Association, will hold its annual meeting at Atlantic City, New Jersey, on February 27 to March 1, 1950. The meeting will be held in conjunction with the annual convention of the American Association of School Administrators.

According to Dr. Frank W. Hubbard, Secretary-Treasurer, the regular AERA program will begin on Monday morning, February 27 and continue through Wednesday morning, March 1. There will be two sessions, each a half-day, excepting Monday afternoon when the annual business meeting is held. All of the sessions will be devoted to papers and panels on current research in the field of education. The banquet which will be held on Monday night, February 27, will feature Dr. Walter S. Monroe, editor of the *Encyclopedia of Educational Research*.

The purpose of the AERA is to encourage and promote the investigation of educational problems through research, publications, meetings, and like means of cooperative endeavor. Those eligible for active membership in the Association are: persons engaged in technical research in education, including directors of research in school systems, instructors in educational institutions, and research workers connected with public or private educational agencies. Membership in the National Education Association is a prerequisite to membership in the AERA. Active membership dues are \$7.00 per year.

Self-Evaluation at Tenth Grade Level¹

LILLIE LEWIN BOWMAN

San Francisco Unified School District

THOSE who are responsible for the program of evaluation in the San Francisco Unified School District are well aware that tests do not exist at the present time and probably never will be made which will measure reliably the total outcome of our instructional program. It is equally true that those rare immeasurable qualities which distinguish the self-sufficient happy person from the insecure and dependent person hold a most important place among the accepted objectives of education.

There are tests, however, which have definite educational value and serve specific guidance functions. Through the work of representatives of each school level serving as a committee on evaluation, such tests have been selected. They are the tests which make up the evaluation program for the school year 1949-50. The selection of tests and the grades in which they are being administered have been given special consideration so that the results will be of the greatest value in the guidance of pupils and in the improvement of instruction and achievement at each successive developmental level.

The most effective guidance at secondary level results from the student's realization of his own needs and his abilities as related to these needs. Steps have been taken, therefore, to provide only tests having self-evaluation features. The program of self-evaluation in secondary schools is a co-operative project involving administrators, counselors, teachers and students, the ultimate goal of which is to lead students in making sequences of desirable choices which foster security and satisfaction. The success of these choices is dependent upon many factors, the most important being

¹ Abstracted from *Guide to a Program of Self-Evaluation in The San Francisco Secondary Schools*—Research Bulletin No. 151.

Dr. Lillie Lewin Bowman, director of the Bureau of Research, San Francisco Unified School District, has a long record in the field of research. She has been in her present position for the past four years, was assistant in the Bureau for 11 years, and served as supervisor for 10 years. Dr. Bowman has taught in both California and Oregon; she has also served as instructor and lecturer at the University of California (Berkeley), and the University of North Dakota. She was recently granted the rank of Diplomate in Counseling and Guidance by the American Board of Examiners in Professional Psychology. Dr. Bowman is a member of the editorial board of the *California Journal of Educational Research*.

that of fitting the students' abilities and aspirations into the pattern of world realities with its ever changing economic and social concepts. Since the evaluation process continues throughout life, it cannot end in the secondary school; hence, it should be a major objective of the school staff to assist students in evaluating learnings, in developing self-direction and in making of desirable choices.

The administrator's part in the program of self-evaluation is in providing instruments to counselors and teachers which will acquaint them with the abilities, needs and purposes of the individuals, and to set up a program in the respective schools in which such information is made available to the individuals in a form understandable to them. While the secondary schools are not limited to the tests prescribed on a city-wide basis, these are sufficient for use as a basic guide to self-evaluation.

The Tenth Grade Evaluation Program

The comprehensive program at tenth grade entrance begins with the *Primary Mental Abilities Test*, which measures five areas of mental development most closely related to learning ability. The scores made by the students on the various sub-tests (Verbal Meaning, Space, Reasoning, Number and Word Fluency) may be graphed to show the student his specific strengths and weaknesses. The relation of these areas to fields of learning are explained by the counselor. Students and counselor discuss together the problems to be met.

The *Iowa Tests of Educational Development* follow, measuring attainment in nine areas:

- Test 1. Understanding of Basic Social Concepts.
- Test 2. Background in the Natural Sciences.
- Test 3. Corrections in Writing.
- Test 4. Ability to do Quantitative Thinking.
- Test 5. Ability to Interpret Reading Materials in the Social Studies.
- Test 6. Ability to Interpret Reading Materials in the Natural Sciences.
- Test 7. Ability to Interpret Literary Material.
- Test 8. General Vocabulary.
- Test 9. Uses of Sources of Information.

These records are graphed on individual cards provided by the publisher and show the student, not only his own attainment in the field, but his achievement in relation to expected achievement for his age and grade.

After ability and achievement are evaluated, the *Kuder Preference Record*, measuring the ten following fields of interest, is administered:

- | | |
|------------------|-------------------|
| 0. Outdoor | 5. Artistic |
| 1. Mechanical | 6. Literary |
| 2. Computational | 7. Musical |
| 3. Scientific | 8. Social Service |
| 4. Persuasive | 9. Clerical |

This tri-dimensional basic program of evaluation when supplemented by all other facts about the individual which influence home and school life become, when used properly, invaluable instruments of guidance. It is hoped that they will lead the participants into an early recognition of strategic needs and in the laying of a sound program for guidance in which the student plays the most significant role.

The data provided should be used systematically in identifying students, in becoming acquainted with them in terms of their abilities and needs, and in guiding them in techniques of self-appraisal. In order that the counselor does not become lost in the mass of data confronting him, it is advisable to identify extreme educational deviates, who are in most urgent need of adjustment and guidance. Who are these deviates? How do we discover them? What can we do for them? The answers to most of these questions can be found by a proper interpretation of these data.

Who Are These Deviates?

They are students who are failing to make satisfactory school adjustments because they fall into one or more of the following groups:

- | | |
|-----------------------------------------|---------------------------------------|
| a. Extremely over-age | e. From an irregular home environment |
| b. Academically retarded | f. From a foreign home |
| c. Mentally retarded | g. Superior or gifted |
| d. Chronologically or socially immature | |

After the needs of these have been met the remaining students may be counseled routinely during the term.

How Do We Discover Them?

Any listing of students showing chronological ages is the clue to many sources of poor school adjustment. The age-grade distribution for San Francisco shows that the average age of a beginning tenth grade student is approximately 15 years, 4 months. Twenty-five per cent are 16 years of age or older at tenth grade entrance and in last year's tenth grade, 391 or eight per cent were more than 17 years of age. While eight students in a hundred may appear insignificant in number, they become most significant in terms of educational and social maladjustment. It is these students who become discouraged and form our earliest group of drop-outs. It is among this socially more mature group that many undesirable behavior departures arise. Unless these students are reached early in the term, they often pass from an unhappy school life to a less happy adult life.

It must be remembered that these over-age students are not only slow learners and the significantly retarded; among them are victims of poor health, concentration camps, and irregular school and home environments arising from dozens of sources. In every case of extreme retardation, the source should be investigated and steps taken toward adjustment.

Frequently, the awareness on the part of the student that someone is interested in his success is the key to the solution.

Another group of students who fail to make satisfactory school adjustments are those who are either socially or mentally immature. Last year, approximately 150 students in their fourteenth year or younger entered the tenth grade. By virtue of the fact that they were highly endowed mentally, they could have made the grade as far as academic success is concerned. There are, however, frequently social conflicts among this group which prove a handicap, and in some cases we find students who are only average for their age struggling against heavy odds. More frequently than not, extremely under-age pupils find their way into high school through over-ambitious parents rather than superior mental ability.

Foreign backgrounds are not necessarily a basis for poor school adjustment. Neither is the language factor the major basis of difficulty. In San Francisco the second generation child of Chinese or Italian speaking parents is sometimes as foreign as a recent emigree from Europe or a student coming in under the displaced persons Act from the Orient. Very often the conflict between new world ideas and old world parents is the source of difficulty, and this is as common among children born in the United States to parents from another country as among our most recent arrivals.

An area of neglect, not only in San Francisco but in general, relates to provisions for the gifted student. A recent survey in San Francisco secondary schools shows that the highest five per cent of students in intelligence were not among those filling the honor rolls, not among the student body officers, and not distinguishing themselves in any school activities. In fact, some were making poor social as well as academic adjustments; others had dropped school at the minimum age without having completed graduation requirements.

What Can We Do for Them?

One does not attempt to give details of therapy in a limited article, particularly when each individual under consideration would require a different treatment. There are, however, procedures to follow so that those most urgently in need of assistance will not be overlooked. The following are a few suggestions given to counselors in the San Francisco secondary schools:

1. The counselor should sit down with the student, review his cumulative record, his school records, his Primary Mental Abilities profile, his Iowa Tests of Educational Development profile and his interest preference. His present program should be analyzed in the light of these factors and, if he appears to be working above or below his capacity or in the wrong direction, changes should be effected.

2. The attention of the parents should be called not only to the ability of their child in terms of students of the same age, but the problems to be met when an immature child is forced to compete with students socially and mentally more mature. Unless such students can be placed into programs where they can realize a measure of success, they will become social as well as academic misfits.
3. It is recommended that as soon as test results are recorded each school make a listing of the students in the 95th percentile, or in the highest five per cent in the school in both the *Primary Mental Ability* and the *Iowa Educational Development Tests*. Check this list of names against the students' records and their cumulative guidance folder. Find out what their past record of success has been and whether they are living up to their promise. High ability alone is not a key to academic success as is evidenced by the many cases to the contrary. These students also need guidance in order that they find their proper place in life and make contributions to society in proportion to their abilities. The student with a specific gift or talent should be directed as soon as possible to someone in the field of his special ability so that he will get sound guidance early in his career.
4. The program of our schools must be explained to foreign parents. Many do not understand that school is a place for other than academic pursuits. This is especially true of the northern Europeans who are insistent upon the college preparatory curriculum with little provision for electives. The southern Europeans, the South Americans, and the Mexicans, on the other hand, do not understand the concept of compulsory full-time education for students until the sixteenth year. The counselor must be resourceful in getting the implications of the prescribed and optional programs before the parents of various backgrounds and nationalities.
5. Counselors cannot be expected to cure the ills of the unsatisfactory home environment, but an understanding of them is frequently the basis for carrying a student through a difficult period. The loss of a parent through death or divorce, a new stepmother or stepfather, an eviction, or a home where the moral standards of the parents are not conducive to the best interests of the child are all important in guidance and no objective test record can be interpreted without a knowledge of the underlying facts.

Through this program of self-evaluation two factors are at work which appear to have results beyond the highest hopes of the administrators and counselors. The tenth grader not only becomes aware of his own abilities and his needs, but in doing so he discovers that others are interested in his success and his happiness. In this day when so many of our homes are inadequate, the type of counseling described here is becoming increasingly significant.

The annual "Research Methods Bibliography" for 1948-49, by Dr. Carter V. Good, Dean of Teachers College, University of Cincinnati, appears in the September, 1949, issue of *The Phi Delta Kappan*.

Appraisal of School Bond Campaign

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THIS public relations study represents an exploratory attempt to discover the relationships existing between the votes cast in a school bond election and (a) the socio-economic characteristics of the school district and (b) certain selected promotional media employed to secure passage of the issue. As indicated by at least two earlier studies,¹ there probably are certain predictable relationships existing between voting behavior, voter status, and promotional effort which, if known, would shape the nature of any school bond publicity campaign, particularly in a large, diversified district.

The results of the \$75,000,000 bond election sponsored by the Los Angeles City School Districts (elementary, high school, junior college) in June of 1946, were subjected to correlation analysis with "Per Cent of Favorable Vote" and "Per cent Actually Voting" as criteria, against various census tract indices of socio-economic status and also against selected indices of campaign promotion.

There were 340,286 "yes" votes and 94,032 "no" votes cast in the 3,574 precincts comprising the school district. In order to reduce this vote to a workable size and take advantage of certain available data, the positive and affirmative votes in the various precincts were converted into similar votes for the 354 census tracts of the district. (A census tract is an arbitrary geographical unit into which all major cities are now divided for the purposes of making population comparisons from census to census.) Through the courtesy of the Haynes Foundation, data concerning education, occupation, age, fertility, population growth, and social rank were obtained for each tract.

In addition, reports were procured from each school principal as to the extent of house-to-house canvassing in his respective area and the number of classes on half-day schedule. Furthermore, a careful plotting was

¹ Gosnell, H. F. and Schmidt, J. J., "Relation of the Press to Voting in Chicago," *Journalism Quarterly*, 13:129-147, June, 1936, pp. 129-147.

Maughan, Reese P., "The Public Vote on Issues of School Finance in Cincinnati, 1929-1939." Unpublished doctor's dissertation, University of Cincinnati, Ohio, 1942, 308 pp. (typewritten).

Dr. John Allan Smith has the distinction of being administrative dean in the Los Angeles Harbor Junior College which is in its first year of operation. He has been in the Los Angeles City Schools, serving in various capacities, since 1928. His article is based upon a doctoral dissertation which he completed in June, 1948, at the University of Southern California.

made as to the reward in the form of school buildings and other improvements promised the various areas of the city in the event the bonds should pass. Finally, a careful analysis was made of the 2,839 column-inches of bond publicity printed by the four metropolitan daily and eight local community newspapers in terms of their claimed circulation and professed geographic area of circulation.

Findings

1. The votes of the craftsmen, operatives, and laborers who actually went to the polls tended to favor the school bonds, but, relatively speaking, not many such voters went to the polls. From a promotional standpoint, such workers are a potential source of "yes" votes, but there must be an advance voter registration drive and a special effort to get them to the polls.

2. Professional, semiprofessional, and managerial workers, as a group, showed a trend unfavorable to the school bonds, but, because of other influences, many individuals voted "yes." As a group they tend to take an active interest in civic elections, and in this election were particularly active in voting. From a promotional standpoint, this group is a potential source of opposition to a school bond election.

3. Clerical, domestic, and service workers, as a group, tended to oppose the school bonds, although there were many who voted for them. As a rule, they tend to be interested in civic elections and went to the polls in substantial numbers in this particular election. From a promotional standpoint, effort would better be expended only on those who would have some special reason for voting affirmatively.

4. Persons with only one to eight years of formal education tended to support the school bond issue, but were lacking not only in accepting their voting privilege, but in registering and in maintaining their voter's registration. Although persons of grade school education may, in general, be counted upon for favorable votes in a school bond election, special effort has to be made to get them to register and to go to the polls.

5. Persons with nine to twelve years of education tended to vote unfavorably on the bond issue unless there were motivating factors to the contrary. That is, persons with high school education cast a "mixed" vote. However, because they tended not to vote in as large proportions as they usually do, the negative effect of their vote was somewhat lessened. As a group, "high school" voters in Los Angeles tend to maintain a fairly high voter registration.

6. Voters with one or more years of college education tended to oppose the school bond election not only in their negative vote, but also in going to the polls in greater numbers than they customarily do in civic elections.

As a group, "college" voters in Los Angeles tend to maintain an active voter registration, but fall below the level of "high school" voters.

7. There was a definite relationship between the economic status of the populations of the census tracts and their support of the school bond election. The lower the economic status, the greater the chances that the per cent of favorable vote of a tract would be relatively high and that the per cent of eligible voters going to the polls would be relatively low.

8. There was a definite relationship between the presence of school-age children in a census tract and the support given the school bond election. The higher the ratio of children in a census tract, the higher the per cent of favorable vote.

9. Parents of school-age children were the most favorable to the school bond issue and more favorable than parents of preschool-age children, nonparents, or parents whose children are beyond school age. In Los Angeles, the parents of pupils go to the polls in more than average numbers, but they are likely not to have maintained their voter registration.

10. Parents of preschool-age children were highly favorable to the school bond issue, but they did not go to the polls in the proportions that might be expected nor were they registered so that they could vote.

11. There was a definite relationship between the presence of elderly people in a census tract and the support given the school bond issue. The higher the ratio of elderly people in a census tract, the lower the per cent of favorable vote. However, they did not make any special effort to go to the polls for the purpose of defeating the school bond issue.

12. Publicity, as such, did not serve to increase the per cent of favorable vote. Publicity in the metropolitan daily newspapers, in particular, was not influential; nor did it have any relationship to the outcome of the election that could not better be accounted for by other factors.

13. There was a somewhat higher per cent of favorable vote in these census tracts in which the local community newspapers gave more favorable publicity, but there was no measurable increase in the proportions of voters going to the polls. Local community newspapers which circulated in relatively poorer areas tended to carry somewhat better publicity for the school bond election than did those local newspapers which circulated in communities of more affluence.

14. The local community newspaper publicity was best in census tracts with greater proportions of school-age youth and in tracts which had experienced relatively greater population increase between 1940 and 1946.

15. The voters' lack of knowledge of specific details as to whether the bond money was to be spent in the voters' own areas apparently did not increase or decrease the voting support in such areas. Lack of such information, presumably, forced the voter to rely upon other reasons in determining his vote. Whether specific knowledge that a given district was not to benefit from the school bond election would have resulted in a lower

per cent of favorable vote in that area could not be determined from the data of this study.

16. House-to-house canvassing as a device to increase the per cent of favorable vote could not be shown to be too effective, even when all or almost all dwellings in a given area were canvassed; at least, house-to-house canvassing did not increase the proportion of voters going to the polls in support of the school bonds. There is a possibility that canvassing may have caused certain minority groups, particularly the poorer Negroes, to refrain from voting.

17. Favorable support in areas not profiting directly must be secured if a school bond issue is to succeed at the polls. Strong support in areas which are to profit from passage of a bond issue is not sufficient.

18. For a school bond election to succeed, parents of preschool or school-age children must be induced to register and go to the polls. Areas with high ratios of school-age children should be well informed of the need for the bonds, of the importance of a successful election, and of the necessity of going to the polls.

19. It would be wise not to urge middle-aged or elderly people who do not have school children in their household to go to the polls on a school bond issue. In fact, it is perhaps inadvisable to expend any effort to campaign in areas with high concentrations of such people.

20. Purchase of a metropolitan daily newspaper is associated with economic status and purchasing power. Therefore, the greatest proportions of readers of the metropolitan daily newspapers are to be expected among those with high school and college educations, among those who hold occupations in the semiprofessional and managerial classifications, and among those able to pay relatively high monthly rentals. The readers of metropolitan daily newspapers are those more likely to take an active interest in civic elections and to oppose expenditure of public funds and increases in taxation. Therefore, a committee in charge of a school bond election campaign should anticipate that any publicity, regardless of its nature or point of view, appearing in a metropolitan daily newspaper is likely to be read by persons who will be opposed to the issue.

21. The metropolitan daily newspaper will not be able to develop affirmative votes for issues involving tax-increasing expenditures so long as those newspapers have their principal circulation in areas which, for economic reasons, are strongly opposed to public bond issues, and have their lowest circulation in those areas which would not feel the direct pressure of increased taxes and which are most likely to support such issues. Such newspapers are not to be counted upon to increase the affirmative vote. They can, however, be expected to increase the negative vote because their readers are voters highly sensitive and opposed to public expenditures. The publicity in metropolitan daily newspapers probably must have strong economic appeals — appeals which, per se, also profit

those of considerable economic security — if they are to be mediums influencing the results of a school bond election. Social and civic appeals have dubious value.

22. On the basis of publicity given the 1946 Los Angeles election, a minimum "standard" to inform the public of any future bond issue would be: one bond story per issue; stories which average 12 column-inches in length; as many favorable (advocating "yes" votes) as informative stories; and no "pro-con" or unfavorable stories. These standards are not to be regarded as necessary to influence positive voting action. They are to be regarded as necessary to inform the public of the need for the bonds as viewed by the board of education and the professional educators. If a newspaper wishes to influence its readers to vote favorably, the standards undoubtedly would have to be set higher; how much higher could not be determined by this study. This would have to be the problem of a future study using the standards here suggested for purposes of comparison.

23. The fact that a school is so overcrowded as to require a half-day schedule for some classes in order to accommodate all the children in a given area is no criterion that the voting in that area will be any more favorable than elsewhere. Overcrowding may only be counted upon to increase the affirmative vote when it is so great as to meet or exceed the average for the entire school district. Even then, the number of voters actually going to the polls is not likely to exceed the average for the entire district.

24. To get effective support in a school bond election, the promise of a reward must be an entire school plant. The promise of a single new building or anything less is not sufficient to induce voters to be any better than average in their support of a school bond election.

"Research has pointed the way for the development of present-day programs and practices, it furnishes the information and data by which the effectiveness of current educational procedures may be judged, and it determines the direction which tomorrow's offering will take by permitting the experimental introduction of forward-looking activities today." Excerpt from Dr. Herold C. Hunt's address to the 1949 annual meeting of the American Council on Education. (*The Educational Record*, 30:336, July, 1949.)

Three Methods of Teaching Arithmetic

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GOOD teachers in the elementary school have long felt that children should understand the meaning or "why" of arithmetic, as well as be able to carry out the computations and know the "how" of arithmetic. Teachers have also noted that if children are shown "how" arithmetic problems are solved or "how" arithmetical computations are carried out, many of the pupils may figure out the "why" for themselves.

These observations have led many a teacher to concentrate her efforts in arithmetic upon showing her pupils "how" new steps in arithmetic were computed and then, after the pupils had worked a number of similar examples, she would check to find those pupils who needed further help and again show them "how" the step was performed. This general procedure, showing "how" to do a problem, giving many similar exercises for practice, and then checking to find where more help is needed, has been used for over a hundred years in the elementary school with varying success. While many children have learned arithmetic through this procedure, every teacher knows that many children have not. She is all too familiar with the complaints of those from outside the school, or from high school teachers, that many children have not the competence in arithmetic that is required to meet their needs.

The teacher is now looking hopefully to the field of audio-visual aids to see what is available to help her explain the "why" of arithmetic to those children who have difficulty understanding it. She finds that there are available many films and suggestions for using concrete materials to help develop the meaning of arithmetic, but she also wonders whether these aids are worth the time that it will take to use them.

The experiment partially described below was an attempt to measure whether or not a method of teaching which required a considerable amount of time spent upon developing the meaning of arithmetic, through the extensive use of audio-visual aids, was worth the extra time.

In 1947, with the excellent cooperation of a number of elementary school teachers in San Francisco, the writer set up an experimental situa-

For the past two years, Dr. Charles F. Howard has been associate professor of education at Sacramento State College. He has had previous professional experience in elementary school teaching and administration. Dr. Howard's article is based on his doctoral dissertation and a follow-up study, both completed at the University of California, Berkeley.

tion where fifteen classes of children in Grades V and VI were taught fractions by three different methods. Considerable effort was made to equate the groups so that the children in each group would be similar to those in the other two groups with regard to mental age, arithmetical ability, socio-economic background, school facilities, and the time spent daily upon arithmetic. The teachers selected were all skillful, experienced teachers, who could have used any one of the three methods employed with competence. Considerable care was taken to insure that the children in each of three groups worked on similar arithmetical problems throughout the sixteen weeks the experiment continued. The sequence in which the new work was introduced to the pupils was the same for each group. The writer spent his full time in visiting the classrooms concerned, and felt satisfied that, apart from the controlled differences provided by the experiment, the learning situation of the children in each group was as similar to that of each of the other groups as could be attained.

Methods Used

The experimental differences in methods employed in each of the three groups to teach each new step in arithmetic are described below.

In Group A, each teacher briefly introduced the new step, carefully showed the pupils how to do the computation or solve the problem involved, and then assigned exercises in similar computation or problems. After the exercises had been completed, the teachers went over them with the class, explaining the difficulties that had arisen, and then assigned further exercises. This process was repeated until the children were able to solve without difficulty the exercises pertaining to the particular step in question. The teacher then proceeded to the next step in the sequence. The children in Group A worked many exercises that were composed entirely of computation, and also solved many verbal problems in arithmetic which involved this computation. For the purpose of the experiment, the use of audio-visual aids was deliberately avoided, and no attempt was made to develop the "why" of each step. The emphasis was placed upon showing the child "how" to do the work, and then giving him abundant practice in working computational exercises and arithmetical problems of a verbal nature.

In Group B, each teacher spent considerable time in introducing each new step. She took time to show the pupil how the step concerned fitted in with his former experience and with the arithmetic he saw in the world about him. She used a set of materials that had been provided for her, and which contained many concrete objects designed to bring out the meaning or "why" of each step. A series of carefully prepared charts were used to help explain the meaning and "why" of each step. When the children

understood the meaning of the new step, the teacher gave them practice in applying their knowledge by having them solve numerous verbal problems in arithmetic. These children were not given drill exercises in computation, but had all their practice in the form of solving arithmetic problems of a verbal nature.

In Group C, the teacher introduced each new step very carefully, as had the teacher in Group B. She used a similar set of materials and charts. She also took considerable time to emphasize the meaning and "why" of the arithmetic involved. The practice provided for the pupils, after they understood the meaning of a new step, was in the form of both numerous exercises in computation and in verbal problems.

Briefly, to sum up the differences among the methods, Group A did not emphasize the "why" of each step and did not use visual aids in the form of concrete materials and charts, but it did have considerable practice in working exercises in computation and in solving verbal arithmetical problems. Group B spent considerable time in learning the "why" of each step, made extensive use of visual aids, and had considerable practice in solving arithmetical problems of a verbal nature, but did not have practice in drill exercises involving computation only. Group C spent considerable time in learning the "why" and in using visual aids, as had Group B, but the practice provided consisted of both verbal problems in arithmetic and in exercises in computation similar to those used in Group A. The teacher in Group C, therefore, employed a combination of the methods used in the other two groups.

At the end of the sixteen weeks experimental period, June, 1947, all groups were retested to see what gains had been made by the children: (a) in solving arithmetical problems of a verbal nature, and (b) in doing exercises involving arithmetical computation only. On first inspection, the results were very surprising because no general advantage for any one method over the other two was apparent. At certain grade levels one method appeared to have a slight advantage over another, but often, after more detailed analysis, it was seen that this gain was only in certain steps that had been developed and did not apply to all steps generally. It seemed, at the time, that it made very little difference whether the teacher used audio-visual aids or not, and that it made very little difference whether or not she developed the meaning of arithmetic. In fact, at the only grade level at which a statistically significant difference appeared, Low V, the difference was in favor of Group A, where no audio-visual aids had been used and where no emphasis had been placed upon explaining the meaning or the "why" of each step. The differences among the gains made by the three groups in the low fifth grade are shown in Table I.

TABLE I

DIFFERENCES IN THE GAINS MADE BY GROUPS IN THE LOW FIFTH GRADE IN COMPUTATIONS INVOLVING THE ADDITION OF FRACTIONS, MEASURED AT THE END OF THE FIRST SEMESTER, JUNE 1947

Groups	Difference Between the Means of the Gains	Standard Error of the Difference of the Means	Critical Ratio
A-B-----	11.5	1.3	8.9
B-C-----	- 7.7	1.1	-6.8
A-C-----	3.8	1.1	3.5

Table I, which shows the gains in computation only, indicates that the difference between the mean of the gains in Group A and the mean of the gains in Group B is 11.5 in favor of Group A, and is statistically significant as shown by the critical ratio of 8.9. The difference between the means of the gains of Group B and Group C, 7.7, is in favor of Group C, and is also statistically significant. The difference between the means of the gains in Group A and Group C, 3.8, is in favor of Group A, and is statistically significant, the critical ratio being 3.5.

Fortunately, however, the experiment was not stopped at this point. Following the summer vacation of the pupils concerned, in September 1947, the tests were repeated in the low fifth grade to see what the children had remembered about the arithmetic they had studied during the spring semester. A very different pattern was immediately apparent. A large difference, statistically significant, was found in favor of Group C. The mean for Group A had dropped considerably, showing that the children had forgotten a great deal of the arithmetic they had learned in the spring semester. The children in Groups B and C had lost very little, and the means were almost as high in September as they had been in June. Group C had lost surprisingly little; in fact it was noted that a few children scored even higher in September than they had on the same test given three months earlier before the vacation period.

TABLE II

DIFFERENCES IN THE GAINS MADE BY GROUPS IN THE LOW FIFTH GRADE IN COMPUTATIONS INVOLVING THE ADDITION OF FRACTIONS, MEASURED AT THE BEGINNING OF THE SECOND SEMESTER, SEPTEMBER, 1947

Groups	Difference Between the Means of the Gains	Standard Error of the Difference of the Means	Critical Ratio
A-B-----	- 0.2	1.8	- 0.1
B-C-----	-12.3	2.0	- 6.1
A-C-----	-12.5	1.1	-11.0

The differences among the means of the gains made by the three groups is shown in Table II. This table indicates the gains in computation only, and shows that the difference between the means of the gains of Group A and of Group B is 0.2, in favor of Group B, but is not statistically significant, as the critical ratio is 0.1. The difference between the means of the gains of Group B and Group C is 12.3, in favor of Group C, and is statistically significant, the critical ratio being 6.1. The difference between the means of the gains of Group A and Group C is 12.5, in favor of Group C, and is statistically significant, the critical ratio being 11.0.

Conclusions

The writer feels that a more extensive analysis will have to be made before the exact steps and grade levels at which it is desirable to use audio-visual aids extensively can be determined. The following general conclusions are, however, justified by the evidence obtained:

1. At the low fifth grade level, children will retain better what they learn in arithmetic if extensive use is made of audio-visual aids and considerable emphasis is placed upon teaching the meaning or the "why" of arithmetic. These gains may not be apparent until some time after the steps have been first taught. In fact, those children taught by a drill approach may, as in Group A of this experiment, score considerably higher on tests given directly at the end of the learning period.
2. A varying relationship should be obtained between the time spent in developing meaning and the amount of practice or drill given through exercises in computation. In Group B, where the children had the meaning of each step developed, but had little practice in computation, the means were consistently lower than in Group C where the children first had the meaning developed through using the same audio-visual aids but had considerably more practice in computation. The relationship between the time spent on developing meaning and the time spent on practicing computations should vary considerably according to the grade level of the children and the step in arithmetic being learned. Just what the best balance is between time spent developing meaning and time spent by the children on exercises and problem solving will depend upon the particular class concerned and the arithmetical step being learned, and will have to be decided daily by each teacher. This study indicates clearly that if the teacher omits either the development of the meaning of arithmetic or the provision for adequate practice in computation there is a likelihood that the child will not retain what he has learned, irrespective of how well he appears to answer questions given directly at the end of the learning situation.

CALIFORNIA TEACHERS — A Portrait

HENRY W. MAGNUSON
California State Department of Education

WHO teaches in California's public schools? How well is he trained for his professional responsibilities? To what extent is he using his professional training in his teaching duties? How long do California teachers remain in the profession? Why do they leave?

These and many other questions were answered in a comprehensive survey which was conducted in 1946-47 by the Bureau of Research of the State Department of Education. The survey report was published in May, 1948, but the facts have not received the attention they deserve. This article presents a brief review of some of the more pertinent survey data.

A simple one-page questionnaire, prepared by the State Department of Education, was used in the survey. Returns were received from 58,277 full-time certificated teachers. The following facts, taken from the survey report, constitute a good "portrait" of California's teaching personnel.

Personal Qualifications

Age —

The median age of all full-time teachers was 43 years; 25 per cent were 51 years of age or over, and 25 per cent were 34 years of age or younger. When considered by teaching levels, it was found that teachers in elementary, high school, and junior college, all had the same median age — 43 years.

Sex —

Of all full-time teachers, 78 per cent were women. The per cent of women according to teaching level was found to be: 94 per cent of all elementary school teachers; 57 per cent of high school teachers; and 33 per cent of junior college teachers.

Marital Status —

Of all full-time elementary school teachers, 80 per cent of the men and 54 per cent of the women were married; of all full-time high school teach-

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ers, 86 per cent of the men and 36 per cent of the women were married; and of all full-time junior college teachers, 86 per cent of the men and 29 per cent of the women were married.

Professional Qualifications

Training Beyond High School —

Of all full-time elementary teachers, 66 per cent had four or more years of training beyond high school, 31 per cent had five or more years, and 10 per cent had six or more years. Comparable figures for full-time high school teachers were: 82 per cent had five years or more, 50 per cent had six years or more, and 22 per cent had seven years or more. As might be expected, junior college personnel were found to be the most highly trained of the three groups; 89 per cent had five or more years of training beyond high school, 73 per cent had six years or more, and 45 per cent had seven years or more.

Degrees Held —

Of all full-time California teachers, 31 per cent had no degree, 55 per cent had bachelor's degrees, 13 per cent had master's degrees, and less than one per cent had doctor's degrees. The percentages shown by teaching level were:

ELEMENTARY SCHOOL	
No degree	46%
Bachelor's degree	50%
Master's degree	3%
Doctor's degreeless than	1%
HIGH SCHOOL	
No degree	8%
Bachelor's degree	65%
Master's degree	26%
Doctor's degreeless than	1%
JUNIOR COLLEGE	
No degree	7%
Bachelor's degree	28%
Master's degree	56%
Doctor's degree	9%

Teaching Conditions

Size of District —

Of all full-time elementary school teachers, 24 per cent were in districts having an elementary a.d.a. of less than 500; 34 per cent in districts of less than 1,000; 56 per cent in districts of less than 4,000; and 66 per cent in districts of less than 10,000 a.d.a. Of all full-time high school teachers, 13 per cent were in districts with a high school a.d.a. of less than 500; 24 per cent in districts of less than 1,000; 47 per cent in districts of less than 4,000; and 62 per cent in districts of less than 10,000 a.d.a.

Of all full-time junior college teachers, 16 per cent were in districts with an a.d.a. in grades 13 and 14 of less than 500; 39 per cent in districts of less than 1,000; and 87 per cent in districts of less than 4,000.

Type of Districts —

Fifty-one per cent of all full-time elementary school teachers, 62 per cent of all full-time high school teachers, and 66 per cent of all full-time junior college teachers were employed in city school districts.

Class Size —

The median size of all elementary school classes was 34 pupils. This median was closely approximated throughout districts of all sizes except those of under 100 a.d.a. The median class size in districts under 50 a.d.a. was 20 pupils, and in districts between 50 and 99 a.d.a. was 29 pupils. The median class size of all high schools was 30 pupils, and of junior colleges, 28 pupils.

Teaching in Major or Minor Fields —

The following percentages of secondary school classes in the various subject fields were found to be taught by a teacher holding a major or a minor in the subject taught or in a subject in the same field:

Foreign Language classes	89%
Science classes	81%
English classes	77%
Physical Education classes	77%
Music classes	74%
Social Science classes	74%
Business Education classes	69%
Vocational classes	61%
Mathematics classes	60%

Professional Experience

Length of Service and Mobility —

The longest period of years taught in one district ranged from 1 to 50 for elementary school teachers, 1 to 49 for high school teachers, and 1 to 35 for junior college teachers. The median number of years taught in a single district for each of the three groups were: 3, 10, and 10.

Of all full-time elementary school teachers: 39 per cent had taught in only one district, 19 per cent in two districts, 12 per cent in three districts, 7 per cent in four districts, and 10 per cent in five or more districts. Thirteen per cent did not state the number of districts in which they taught.

Of all full-time high school teachers: 47 per cent had taught in only one district, 22 per cent in two districts, 12 per cent in three districts, 5 per cent in four districts, and 5 per cent in five or more districts. Nine per cent did not state the number of districts in which they taught.

Of all full-time junior college teachers: 43 per cent had taught in only one district, 24 per cent in two districts, 11 per cent in three districts, 6 per cent in four districts, 4 per cent in five or more districts. Twelve per cent did not reply to the question.

Withdrawals from Teaching —

Many teachers drop out of teaching for varying periods of time. The following table presents an analysis of the reasons which were given by those who withdrew from the profession for a period of time:

Reasons for Withdrawing from Teaching

Reasons Given	Elementary School Teachers (%)	High School Teachers (%)	Junior College Teachers (%)
Military Service -----	5	27	37
Study and Travel -----	9	27	18
Marriage -----	33	13	5
Entered other occupation -----	7	15	19
No reason given -----	20	2	7
Maternity -----	10	5	3
Reason not classified -----	7	4	6
Illness (self) -----	6	4	2
Illness (family) -----	2	2	1
Unable to obtain position -----	1	1	2

Only a few of the pertinent facts of the State Department of Education survey are given in this article. The Survey Report merits careful study and analysis by those who need facts concerning California's teachers.

* * * * *

"Many investigators using the traditional forms of research are concerned about the slowness with which research findings affect practice. They would be disposed, however, to say that the problem is largely one of communication. If research reports were more lucidly written or more copiously illustrated or if the implications for practice were stated more clearly, teachers would be able to put the results to work. . . . The reading of research studies conducted by someone else undoubtedly has some influence upon the practices of teachers. Greater influence will be exercised, however, by data a teacher himself accumulates and interprets in connection with his attempts to cope with an instructional problem about which he is seriously concerned." Excerpt from article by Stephen M. Corey on "Fundamental Research, Action Research, and Educational Practices" (*Growing Points in Educational Research*, 1949 Official Report of the AERA, pages 264-265).

Student Teachers and Research

H. ORVILLE NORDBERG
Mills College

RESearch in education is justified and exists primarily to find those truths which may bear upon the improvement of education as a science and upon teaching as an art. And since the discernible truths in all educational endeavor undertaken in a democracy must be subjected to application by society, it is clear that available research findings both merit and demand careful scrutiny.

But is the research examined? Are teachers, as directors of learning, aware of the implications of research for classroom teaching? If the improvement of instruction and the programs of teacher education do not keep pace with the opportunities demonstrated by research, the time and the effort consumed in such research largely is wasted.

Serious doubts as to the awareness of teachers regarding the implications of research have been expressed frequently, particularly by professors who have educational journals readily available and for whom the abstruse jargon presents no obstacle. But evidence that new teachers do not possess a knowledge of the research now appears to be more important than the demonstrable fact that older teachers lack an adequate realization of the usefulness of research.

The writer recently administered a 100-item true-false instrument to student-teachers in several colleges and universities to determine their awareness of implications of research for teaching spelling, written expression, and grammar and usage.¹ It was found that only 30 of the research implications embedded within the instrument were accurately recognized by a sufficient proportion of the student-teachers to indicate positive group awareness. The responses measuring the extent of awareness of 28 implications were proved statistically to be within the range of guessing, while on 42 items the student-teachers as a group were definitely not aware of the research implications.

¹ Nordberg, H. Orville. *The Awareness among Student-Teachers regarding Research in the Language Arts*. Ph.D. dissertation, University of California, 1949. 235 pp.

Dr. H. Orville Nordberg for the past three years has been assistant professor of education at Mills College. His prior teaching was done at San Diego, Acalanes Union High School, and the California College of Arts and Crafts. His article is based upon his Ph.D. dissertation which was completed in June, 1949, at the University of California, Berkeley.

The data indicated that the future teachers were not appreciably more aware of the research in any one of the three fields; thus they did not know more about the efficient teaching of spelling than of written expression or of grammar and usage. Moreover, the future elementary teachers tested were somewhat more aware of better methods of teaching the language arts than were the secondary school teachers even though the test items were phrased to be especially applicable to the secondary school.

There are several questions which might be asked in the light of these findings; some of them merit citation here. First, if the newly-trained teachers cannot be expected to know the lessons to be learned from the research, what assurance is there that they will acquire such knowledge later? Second, are the academic course requirements for graduation and the teaching credential so heavy as to prohibit suitable attention to the practical art of classroom teaching? Third, are secondary school teachers of the language arts so concerned in their undergraduate years with the aesthetics of literature that they cannot learn to teach well such essentials as spelling, written expression, and usage? Finally, may it be assumed that teachers of mathematics, the physical sciences, and the foreign languages also are being wasteful of time, money, and energies and that their teaching efforts are being expended without a commensurate return in pupil achievement?

Certainly the secondary school teacher of the language arts must himself achieve a thorough grounding in the structure and use of the English language before attempting to provide learning experiences for others. But it also appears necessary that teachers have a fuller realization of the direct inferences to be drawn from research findings. It is recommended that (1) the preservice training of teachers include specific instruction in the reading, analysis, and interpretation of reported research; (2) cogent summaries and implications of research increasingly be published and distributed by responsible authorities; (3) practical applications of research be utilized in the textbooks of education and throughout all teacher-education programs in institutions of higher learning.

CERA To Meet at San Jose

The Annual Conference of the California Educational Research Association, Northern Section, will be held at San Jose State College on Saturday, March 25, 1950, according to Dr. Harold D. Carter, president. The theme of the Conference will be "Research to Meet Educational Needs." Those who desire to present papers at the Conference should contact Dr. Carter at the School of Education, University of California, Berkeley.

Study of Terminal Vocational Students

STANLEY L. COMBS

University of Redlands

TERMINAL vocational junior college students are not getting training in general education for well-rounded living. Judging from a recent investigation conducted at three California junior colleges,¹ they seem to favor occupational goals to the exclusion of other areas of living. Education for personal understanding, for relationships with others, and for active, participating, democratic citizenship are vital needs for them also. Rather than neglect these other areas of living so vital to the development of the whole person, can we not build a required core of general education?

Providing a unified general education for American youth is a challenge of the President's Commission on Higher Education.² Junior colleges and other institutions of higher learning imperatively need to find the right relationship between vocational training and an integrated general education program. There must be a broadening of curricula so that, while the student is preparing to make a living, he is also learning to understand and practice democracy and how to live away from the job. This "human wholeness" is one of the aims of general education for active democratic participation.

While being given the opportunity to develop marketable skills for increasing their economic efficiency, how can the young men and women reach a fuller understanding of their fellows at work and play? How can terminal vocational students in the junior colleges best be aided in acquiring some of the fundamentals they need for rich personal living? Should they not, while developing vocational skills, develop also their awareness of their duties as citizens?

¹ Bakersfield College, Pasadena City College, San Bernardino Valley College.

² The President's Commission on Higher Education, "Establishing the Goals," *Higher Education for American Democracy* (Washington, D.C., December, 1947) Vol. I, p. 6.

Dr. Stanley L. Combs holds the rank of associate professor of education at the University of Redlands where he has taught for the past two years. He took his undergraduate work at the University of Colorado, and graduate work at the following institutions: University of Southern California, Oxford University, University of Washington, and the University of California at Los Angeles. Dr. Combs' article is based upon his doctoral dissertation which was recently completed at the University of California at Los Angeles.

What is the junior college doing to meet needs of so-called terminal students as compared with upper divisions preparatory students? Are the terminal students receiving a general education within their capacities and according to their desires while they are training for their jobs? Caring for the needs of terminal students is probably the most pressing and critical problem of the junior college.

It was the purpose of this investigation to discover, first, what kind of person the terminal vocational junior college student is. Further, it studied the type of general education offered him. And, finally, it made suggestions concerning the content of general education that seems most suitable for the terminal student as revealed by a study of his characteristics.

The Terminal Vocational Student

Briefly the "typical" student of the group comes from a lower middle class home where his mother is a housewife and his father a skilled laborer. Both parents attended high school. The student's health is good; his hobbies are athletic and manual. He likes doing things with his hands, but seldom reads for pleasure. His occupational aims are well-defined and he is in a hurry to go to work. He has, in many cases, had work experience related to his vocational aim and is at least partially self-supporting. If the student is a man, he expects to become a skilled worker; if a woman, an office clerk. His high school grades averaged "C", and he is earning a "C+" in his junior college major. He scores in the fourth decile of the national norms in academic achievement tests, and his total score in the A.C.E. Psychological Examination is in the third decile of the national norms. In a study of values he shows an overwhelming preference for the religious, although economic and political values are also favored.

Among the terminal students analyzed, approximately one third of the women and more than three fourths of the men are at least partially self-supporting. They have had, and are working at, all sorts of jobs, most of which lean more to the real occupational world than to the part-time work of high school adolescents. A very high percentage of all the students studied have had work experience related closely to their stated vocational aims. Terminal students in these colleges, then, may be assumed to know some of the problems of the occupational world for which they are preparing.

Hobbies of these students are preponderantly physical in nature. About twenty-five per cent of them like to work with their hands. More than a third report that they enjoy recreational life out-of-doors, but often merely as a spectator.

Nearly three fourths of the members of these students are housewives. Employed mothers generally are sales clerks or office workers. Four classi-

fications representing kinds of employment of nearly two thirds of the fathers are, in order, skilled labor, managerial and official, agriculture, and sales (adapted from classifications in the *Dictionary of Occupational Titles, Part II, Titles and Codes*, Washington, D.C.: U. S. Government Printing Office, June, 1939). Skilled labor accounts for the largest percentage, about one fourth of the total.

Nearly half of the mothers and fathers attended high school, but the mothers are reported as having had more formal schooling than the fathers.

The occupational aims of nearly all the students are well-defined. Indeed there appears marked lack of interest in courses not leading directly to their vocational goals. Most of the women, as well as some of the men, expect to become office clerks. By far the largest percentage of the men want to do skilled work: automotive mechanics, radio maintenance, aviation technology, sheet metal work, etc.

As is to be expected, a high relationship exists between the occupational aims of these students and their junior college majors. The most popular courses are those of the Business and Distributive curriculum and of Trades and Technology.

In the three high school subjects (English, mathematics, and social studies), grades of which were analyzed, these students received a "C" average. The picture of these men and women in their junior college major grades differs from that presented by their high school marks in that they earned slightly above average grades (C+) in the fields of their interest.

Results of the American Council on Education Psychological Examination follows the same pattern as the achievement tests. More than half of these students have total scores in the lowest three deciles, with two thirds of them ranking in the percentiles below fifty (0-49) in total scores of the A.C.E. Psychological Examination.

According to items checked on the Strong Vocational Interest Blank, four fifths of the students have interests closely related to their occupational aims.

The value which appears to be of primary importance to women in particular (from the Allport Study of Values) is "Religious." Among the men, it is a strong third only to "Economic" and "Political." The "Religious" value, however, rates an overwhelming first preference among all students. This fact would seem to indicate a yearning for spiritual adequacy within terminal vocational junior college students.

General Education Offerings

From a study of the kinds of general education now offered these students there is evidence that few general education courses are planned to meet their needs and abilities. The scope and content of general edu-

cation now usually given terminal vocational students in three California junior colleges are confined to a few courses in English, history and government, sociology, economics, psychology, health, and physical education. In general these courses seem limited. Traditional aims predominate, and content (revealed by a study of catalogs and instructors' outlines) appears frequently to be more that of subject matter rather than student's needs. There are, however, some exceptions to this fact, i.e., the courses in Special Repair English, Business Speech, Spelling, Writing Laboratory, American Problems, Sociology of the Family, Psychology for Personal Efficiency, and Health. This group is, however, an aggregate of courses from three schools and does not represent those offered by only one institution.

Even when courses are available which are related to needs and abilities of terminal vocational students, there is evidence that these students are not enrolled in them. Instead they take courses which tend to be more "academic" than "terminal." There are a few exceptions; at one college all of the terminal vocational students are taking a course designed to meet their needs for understanding themselves, at another institution most of these students are enrolled in a course which endeavors to aid them to understand their functions as democratic citizens, emphasizing problems of contemporary government.

Psychological and achievement test results show that these students score in the lowest deciles of the national norms, and, therefore, they require a special type of English which applies to their terminal and occupational needs. One such course in remedial English, apparently set up for them, enrolls none of these terminal vocational students.

(The second half of Dr. Combs' article, which will appear in the March issue, proposes a curriculum in general education to meet the needs of terminal vocational students.)

* * * * *

"An expanding education and a changing civilization continue to present challenges which must be met with vigor. In the past, we have not feared to seek new strength through change and adaptation; we shall not in the future be content to lose purpose through adhering to sterile tradition. At times in our joint effort we may have slacked, worshipping the giants of the generation before us. Now their ranks thin; our own roles have come up for review. We need find within ourselves those elements of strength with which to carry forward and continuously re-define the work which has so well been begun." Excerpt from report on "The American Educational Research Association in 1948," by Douglas E. Scates (*Growing Points in Educational Research*, 1949 Official Report of the AERA, page 142).

Changing Pupil Behavior

STANFORD S. KIGHT AND JOHN M. MICKELSON
Temple University

ONE of the most widely accepted objectives of modern secondary education is that of improving the behavior of the learner. Even though rather general agreement has been reached on the desirability of attaining this objective, there has been little agreement as to the educational methodology and curriculum organization best suited to this end.

One group contends that the most effective means of improving the learner's behavior is to be found in the organization of all instruction around a genuine pupil problem. A problem is defined by this group as a situation in which action is involved, the learner is the agent of the action, and he has some difficulty or blocking in regard to the action.

In the light of this definition of a problem, the presentation of units of instruction must focus the factual information on the pupil's difficulty in such a manner as to relate this information directly to the action which the pupil must take in order to overcome his difficulty or to solve his problem. Thus, in the problem presentation the relationship of factual information to the necessary rules of action is not left to chance, but is the core around which the entire presentation is organized.

Another group has held that, providing the learner is in command of the essential facts supporting a given action, this action can naturally be expected to follow. It is further contended by this group that the organization best suited for the learning of such facts is one based on the internal consistency of the facts. This has been called a logical or subject-centered

Dr. Stanford S. Kight is a colleague of Dr. Mickelson's at Temple University, where he also holds the rank of assistant professor of education. Dr. Kight served as teacher and administrator in various Missouri schools before going to the University of Southern California for graduate study. He also received his doctorate in 1947. One of his responsibilities at Temple University is the direction of the Service Center in Group Dynamics in the Division of Secondary Education.

Dr. John M. Mickelson is assistant professor of education at Temple University, Philadelphia, Pennsylvania. He formerly taught at Glendale, California, the University of Southern California (part-time), and at the University of Akron, Ohio. His article is based upon his doctoral dissertation which was completed at the University of Southern California in August, 1947. He collaborated with Dr. Stanford S. Kight in preparing the dissertation.

organization of curricular material. The presentation of such material ignores or only incidentally touches upon the relationship between facts and their corresponding rules of action; the subject-centered presentation is largely concerned with the teaching of facts in their logical relationship to each other.

The authors attempted to determine the relative effects of these two approaches in changing pupil behavior. An investigation was conducted in which 24 teachers in 11 schools in the Los Angeles area taught 8 problem-centered units and 8 subject-centered units to 1415 pupils in 96 classes. The study sought answers to the following specific questions:

1. What are the relative effects of the two types of presentation on:
 - a. The learning of rules of action?
 - b. The learning of factual information?
 - c. The ratio of rules of action learned to factual information learned?
 - d. The connecting of specific facts with their corresponding rules of action?
2. To what extent is this learning related to the I.Q. of the learner?

The experiment was conducted in such a way as to give reasonable assurance that the two types of presentation would be evaluated in accordance with the best teaching practices associated with each.

The results of this investigation indicate rather clearly that problem-solving can be expected to produce more behavior change than will the subject-centered approach to learning. In terms of rules of action learned, the findings of the study reveal a consistent pattern of difference between the two types of presentation regardless of subject-matter fields. All these differences were statistically significant and in favor of problem-solving. The results in terms of factual information learned by the two presentations seemed to be somewhat related to the subject-matter field in which the presentation was made. In each instance the difference obtained between the two presentations was in favor of problem-solving, but it was not statistically significant in all instances. Even though each of the differences was not statistically significant, the pattern of differences was the same (in favor of problem-solving) as was found for the learning of rules of action.

Another aspect of the study compared the learning of both rules of action and factual information by a particular type of presentation. It was found that under problem-solving there was a definite tendency to learn somewhat more rules of action than factual information, although the difference was not significant. The same type of comparison was made for the subject-centered type of presentation. Here the findings leave no doubt that more factual information was learned than were rules of action. A careful examination of the findings so far discussed makes it clear that pupils learned more rules of action and more factual information through problem-solving than they learned as a result of the subject-centered type of presentation.

One of the most interesting aspects of this investigation was an attempt to determine the extent to which pupils saw the relationship between a particular fact or set of facts and the rule of action which should follow from the knowing of such facts. Only a sampling of the total data obtained was considered in attempting to determine this relationship. The data sampled indicated the superiority of the problem-centered presentation in aiding pupils to make the connection between specific rules of action and their corresponding specific facts.

A portion of the data was also considered from the standpoint of its relationship to the I.Q. of the learner. The same general patterns established in the findings already discussed seemed to hold regardless of the I.Q. of the pupil. It is interesting to note, however, that while the pattern of learning was the same for pupils in the I.Q. range 115 to 143, the differences were not statistically significant. The differences for the pupils in the I.Q. range 62 to 85 remained statistically significant. This would seem to indicate that learning by the pupils in the higher I.Q. ranges was less affected by the type of presentation than was the learning of the pupils in the lower I.Q. ranges.

In so far as the aspects of learning under investigation in this study are important in the improvement of pupil behavior, and in so far as the subject areas and topics sampled are representative of the curriculum as a whole, the study indicates that conformity to the following rules should contribute to increased learning.

1. Organize each instructional unit around a genuine, pupil-accepted problem area.

For this problem area to be accepted by the pupil, it should grow out of his own experience and be a part of his everyday living. It should be a problem which the learner must solve in order to maintain his place as a functioning member of society. This comprehensive problem area should be delineated into its sub-problems, so as to enable the learner to make a clear identification between his purposes and these sub-problems as goals to be achieved.

2. State and present the pupil problems as something to do rather than something to know.

The findings of the study indicate clearly that rules of action are best learned when those rules of action are clearly identified and stated. If the objective of modern secondary education is the improvement or changing of pupil behavior, the results of this study indicate that the action to be taken, or the thing to do, cannot be expected to follow naturally from the knowing of the essential facts supporting an action, but that the action itself must be defined, stated, and taught. This rule seems to apply to desired actions in each of the subject fields sampled.

3. *Focus all the factual information presented directly on the solution of the pupils' problems.*

The findings of the study indicate clearly that the pattern in which pupils study factual information is important in their understanding of the connection between facts and their corresponding rules of action. It will be recalled that the amount of factual information learned did not vary greatly as a result of the two methods of presentation. The results did show, however, that the pupils more consistently learned to connect the specific facts with their corresponding rules of action in the problem-solving situation. If action is to be intelligent, it would seem to follow that the learner must be able to make this connection consistently.

This study, along with others of a similar nature, indicates that, at least for a majority of the learners, problem-solving offers a sounder and more direct approach to intelligent behavior change than does the subject-centered type of presentation.

Suggested Research Problems

1. An analytical study of teachers' living standards compared to their professional incomes.
2. An evaluation study of California's program of continuation education.
3. A study of the relationship between financial expenditures for public elementary and secondary education and the effectiveness of the educational programs found in California school districts.
4. A follow-up study of certificated personnel who have left the teaching profession in California since the close of World War II.
5. A comparative study of the preparation for high school of eight-grade graduates from small elementary school districts and those from larger unified districts.
6. A study of the effect of the present method of distributing State school funds on school consolidations in California in recent years.
7. The development of a "formula of necessity" for use in apportioning State funds to small districts in California.
8. The development of a system or technic of appraising democracy in school administration.

Book Reviews

Findings and Recommendations of the Committee on School Districts

State of California, Sacramento 14, California, September 24, 1949, 129 pp.

The California State Legislature in 1945 authorized the establishment of a State Commission on School Districts. During its two and one-half years of active operation, the Commission directed surveys in all counties of the State. This report cleverly portrays the accomplishments, trials and tribulations, and recommendations of the Commission. The Commission went out of existence on October 1, 1949.

The report, prepared under the direction of George H. Geyer, State Survey Director, reviews the history of school district reorganization in California and points out the urgent need for a better plan of organization than is now found in the State. Facts presented in graphical form call attention to the weaknesses of the existing pattern of small school districts. Financial data are cited to prove that school funds could be more expeditiously used in larger school units. Chapter IV presents the findings and recommendations of the Commission, many of which will challenge the best thinking of California educators. The report should serve as a useful guide or handbook for those who are concerned with the development of a better and sounder plan of school district organization in California.

The report is well documented and should prove useful as a history of school district reorganization in California. It is unusually attractive and presents its facts in terse, striking fashion.

Report of the Cooperative Committee on School Finance

Prepared under the joint direction of the California State Department of Education, Sacramento, and the California Teachers Association, San Francisco, January, 1949, 150 pp.

This report represents the most complete and authentic analysis of the financial problems and needs of California's public elementary and secondary schools. The Cooperative Committee on School Finance, with the help of Dr. John K. Norton, Professor of School Administration, Teachers College, Columbia University, and Dr. Eugene S. Lawler, Professor of Education, Northwestern University, spent nearly two years in its study of California school finance problems. The report served as a basis for determining needed revisions in the State school apportionment law, Assembly Bill 2120.

The report consists of two parts: (1) the recommendations and their justifications; and (2) the reports and studies of various subcommittees and individuals who furnished data concerning financial problems and needs. Specific reports in the latter section include the following:

- a. Modification in the State School Support Foundation Program;
- b. Recommendations concerning the County School Service Fund;
- c. Financing public junior college education;
- d. Estimates of California's future school population: 1948-1960;
- e. The problem of rapidly-growing school districts as related to equalization of state support for current expenditures;
- f. Financing pupil transportation in California public school districts;
- g. Capital outlay needs;
- h. Assessment practices in California counties and their relationship to measuring local ability in making contributions to a foundation program of education;
- i. Reorganization of school districts and state school finance.

It should be noted that the *Report of the Cooperative Committee on School Finance* in its preliminary edition was confidential and non-circulating. However, copies may be borrowed for short periods of time from either the California State Department of Education or the California Teachers Association.

The Third Mental Measurements Yearbook

O. K. Buros, *Editor*

Rutgers University Press, New Brunswick, N. J., 1949, 1047 pp.

According to the editor, this Yearbook attempts to list all commercially available tests — educational, psychological, and vocational — published in English-speaking countries between October, 1940 and December, 1947. It was the intent of the editor to publish a Yearbook once every two years, but World War II called a halt to such activities. The first two Yearbooks were published in the late 1930's.

The Third Mental Measurements Yearbook consists of two major sections: (1) tests and reviews, and (2) books and reviews. The "tests and reviews" section lists 663 tests, 713 original reviews by 320 reviewers, 66 review excerpts, and 3,368 references on the construction, validity, use, and limitations of specific tests. The "books and reviews" section lists 549 books on measurements and closely related fields, and 785 excerpts from reviews of these books which appeared in 135 journals. The books listed were published between 1940 and 1947.

Tests and their reviews are classified by subject and interest fields. The Yearbook may be used for many purposes, but is especially useful as a source book of information regarding available commercial tests. It should prove to be indispensable to research departments and to counselors.

Research News and Views

Under the direction of Dr. David G. Ryans, Associate Professor of Education, University of California at Los Angeles, the American Council on Education is sponsoring a research project, the "Teacher Characteristics Study," in an effort to determine those interests and qualities of temperament that characterize teachers who are regarded as being effective in their relationships with pupils. The two major objectives of the study are: (1) the identification of certain traits or qualities of successful teachers; and (2) the development of measures of teacher interests and temperament. The study is expected to cover a three-year period which started September, 1948. The Grant Foundation appropriated the sum of \$60,000 to the American Council on Education for use in the "Teacher Characteristics Study."

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"The amount of time spent in today's school on the three R's is more than four times as great as it was a hundred years ago," NEA Secretary Willard E. Givens states in his *1949 Annual Report*. "Year by year, opportunity to acquire skill and interest in reading has been advanced in our schools. Children read more books. They read more rapidly. They read with greater understanding. In the schools of our grandfathers, one basic reader was often the only reading text. It is not unusual in the better schools of today for a pupil to read 25 or 30 books during his first year."

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The October 1949 issue of the *Pittsburgh Teachers Bulletin* reports on the present status of those who were selected as the "best teacher" of the year for 1946, 1947, and 1948. Roy Fisher of Nathalie, Virginia, the 1948 winner, is using his \$2,500 contest award to work on his master's degree at the University of North Carolina. Miss Aline Neal, "Best Teacher of 1947," who was getting a \$1,900 salary after 24 years of teaching, has doubled that salary in her new teaching position at the St. Andrew's Episcopal School in Jackson, Mississippi. Mrs. Edith Binker, the 1946 winner, who had an average salary of \$1,284.09 for 22 years of teaching, is now a special teacher for a "problem room" of slow-learning high school students in Dunellen, New Jersey, where she receives a salary of \$3,200 a year.

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A comprehensive school survey was authorized by the Oregon Legislature. The survey will be conducted under the direction of Dr. T. C. Holy, of Ohio State University, and will get under way early this year.

School districts in Illinois have been reduced from 11,000 in 1945 to less than 6,100 at present.

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In less than a year, Arkansas' program of school district reorganization has reduced the number of districts in the state from 1600 to 423.

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According to the final report of the California Commission on School Districts, California had 2,332 active school districts as of June 30, 1948. Included in this number were 2,026 elementary school districts, 259 high school districts, and 47 unified districts. A total of 1,001 districts were reported to employ either one or two teachers.

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Seventy-five persons from all sections of California attended the First Annual Conference on Educational Research at Santa Barbara College on October 14 and 15, 1949. Features of the program were: (1) a report of the statewide survey of school research departments in California cities and counties; (2) a talk by Dr. Ivan Booker, Assistant Director, NEA Research Division, on "The Expanding Role of Educational Research in Education: A Challenge"; and two panel discussions on problems and needs in educational research, and suggested solutions. Dr. Booker's talk will be published in the March, 1950, issue of the *California Journal of Educational Research*. Those attending the Santa Barbara conference voted unanimously to request that the meeting be made an annual event. The conference was sponsored by the State Advisory Council on Educational Research and the California Teachers Association.

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Did you know that:

... about four million children in this country, five to seventeen years old inclusive, are not enrolled in any school?

... approximately nine million more children are expected to be enrolled in 1959-60 than were attending our schools in 1947-48?

... an estimated 95,000 teachers held substandard certificates in 1948-49?

... only 77% as many persons completed standard training courses of one to four years for elementary school teaching in 1949 as in 1941?

... the average annual salary for teachers in 1948-49 was less than \$2,000 in eight states, and less than \$1,500 in one state?

... 8,611,000 American adults, 25 years of age or older, had less than a fifth-grade education in 1947?

—(Adapted from *NEA News*, October 7, 1949)

Out of the 1,700,000 students who entered high school in the ninth grade last fall, only about one half will remain to graduate four years from now. So reports the National Child Labor Committee in its new publication, *Early School Leavers — A Major Educational Problem*, by Harold J. Dillon. The Committee conducted an investigation to discover causes of early school leaving and the warning signs of vulnerability to school leaving.

The study revealed that the majority (54%) leave school at age 16, and that the great majority leave prior to completing the tenth grade. School records showed that 40 per cent of the school leavers have normal or above-normal intelligence (I.Q.'s of 95 or above), and 60 per cent below normal (below 95 I.Q.). Nearly one-fifth had I.Q.'s above 105. School leavers were not handicapped by frequent changes of residence, as might be presumed, since 83 per cent were born in the state where they went to school, and 80 per cent attended the same school system from the first grade until they dropped out.

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The teacher shortage, especially in elementary schools, is apt to be with us for a long time to come, according to the NEA Commission on Teacher Education and Professional Standards. Here are some startling facts:

1. A total of 1,033,994 new elementary teachers will be needed, according to estimates, in the decade 1949-50 through 1958-59. Of this number:
 - a. 262,100 will be required to fill new positions;
 - b. 559,434 will be needed to replace those who will quit teaching;
 - c. 70,000 will replace those who are on emergency credentials;
 - d. 142,460 will be required to reduce average class size to 25 pupils.
2. Elementary teaching positions will increase from 643,500 in 1947 to an estimated total of 921,000 in 1957-58, the peak year for elementary school enrollment — an increase of 277,500 positions.
3. If the 1947-48 rate of preparing new teachers continues, there will be an estimated shortage of 621,894 elementary teachers by 1958.
4. The estimated average annual demand for elementary teachers during the decade, 1949-50 through 1958-59, will be 103,399, requiring a production rate of over five times the 1947-48 rate to meet the demand.

The secondary teacher situation, according to the NEA report, presents an entirely different picture. Whereas the supply of elementary teachers falls far short of meeting the demand, it is anticipated that there will be a surplus of 136,298 secondary school teachers by 1956 if the 1947-48 production rate continues.

—(Based on report: "Probable Demand for Teachers in the U. S. for the Decade 1949-50 through 1958-59.")

